

NAREL AirBeta Batch Analysis

NAREL assay batch: 0017460M
 G5000 batch: 0017460M-20131022142442
 Instrument: PR01
 Operator: Siddiqui, Nina S.
 Background: 2013-10-22 07:49 CDT 100.00 min
 Alpha: 33 count(s) 0.33 cpm Within target range
 Beta: 517 count(s) 5.17 cpm Within target range
 Efficiencies: Alpha 0.3088(93) Beta 0.453(14)
 Efficiency check: 2013-10-22 07:39 CDT 10.00 min
 Alpha: Within target range
 Beta: Within target range
 Data file: 0017460M-20131022142442.air

Venu
At
10/23/13

Pos	Sample ID	Size	Unit	Fraction
1	B3.10127Z	4.00(20) × 10 ³	M ³	1
2	B3.10128A	4.27(21) × 10 ³	M ³	1
3	B3.10129B	4.29(21) × 10 ³	M ³	1
4	B3.10130U	4.24(21) × 10 ³	M ³	1
5	B3.10131V	1.002(50) × 10 ⁴	M ³	1 > 5 d of sampling
6	B3.10132W	4.30(21) × 10 ³	M ³	1
7	B3.10133X	4.30(22) × 10 ³	M ³	1
8	B3.10134Y	3.73(19) × 10 ³	M ³	1
9	B3.10135Z	1.006(50) × 10 ⁴	M ³	1 > 5 d of sampling
10	B3.10136A	9.60(48) × 10 ³	M ³	1 > 5 d of sampling
11	B3.10137B	4.10(21) × 10 ³	M ³	1
12	B3.10138C	3.85(19) × 10 ³	M ³	1
13	B3.10139D	3.04(15) × 10 ³	M ³	1
14	B3.10141X	7.18(36) × 10 ³	M ³	1 > 5 d of sampling
15	B3.10142Y	5.80(29) × 10 ³	M ³	1
16	B3.10143Z	4.27(21) × 10 ³	M ³	1
17	B3.10144A	5.56(28) × 10 ³	M ³	1
18	B3.10145B	5.74(29) × 10 ³	M ³	1
19	B3.10146C	4.32(22) × 10 ³	M ³	1
20	B3.10147D	6.16(31) × 10 ³	M ³	1
21	B3.10148E	4.31(22) × 10 ³	M ³	1
22	B3.10149F	4.31(22) × 10 ³	M ³	1
23	B3.10150Y	2.81(14) × 10 ³	M ³	1
24	B3.10151Z	2.96(15) × 10 ³	M ³	1
25	B3.10152A	4.31(22) × 10 ³	M ³	1
26	B3.10153B	4.31(22) × 10 ³	M ³	1
27	B3.10154C	4.24(21) × 10 ³	M ³	1
28	B3.10155D	4.16(21) × 10 ³	M ³	1
29	B3.10156E	3.19(16) × 10 ³	M ³	1
30	B3.10157F	5.67(28) × 10 ³	M ³	1
31	B3.10158G	4.28(21) × 10 ³	M ³	1
32	B3.10159H	4.32(22) × 10 ³	M ³	1
33	B3.10160A	4.18(21) × 10 ³	M ³	1
34	B3.10161B	5.70(28) × 10 ³	M ³	1
35	B3.10165F	7.17(36) × 10 ³	M ³	1
36	B3.10166G	4.66(23) × 10 ³	M ³	1
37	B3.10167H	4.18(21) × 10 ³	M ³	1
38	B3.10168J	7.43(37) × 10 ³	M ³	1 > 5 d of sampling
39	B3.10169K	8.60(43) × 10 ³	M ³	1 > 5 d of sampling
40	B3.10170C	5.68(28) × 10 ³	M ³	1

1	B3.10127Z	$4.00(20) \times 10^3$	M ³	1	
2	B3.10128A	$4.27(21) \times 10^3$	M ³	1	
3	B3.10129B	$4.29(21) \times 10^3$	M ³	1	
4	B3.10130U	$4.24(21) \times 10^3$	M ³	1	
5	B3.10131V	$1.002(50) \times 10^4$	M ³	1	> 5 d of sampling
6	B3.10132W	$4.30(21) \times 10^3$	M ³	1	
7	B3.10133X	$4.30(22) \times 10^3$	M ³	1	
8	B3.10134Y	$3.73(19) \times 10^3$	M ³	1	
9	B3.10135Z	$1.006(50) \times 10^4$	M ³	1	> 5 d of sampling
10	B3.10136A	$9.60(48) \times 10^3$	M ³	1	> 5 d of sampling
11	B3.10137B	$4.10(21) \times 10^3$	M ³	1	
12	B3.10138C	$3.85(19) \times 10^3$	M ³	1	
13	B3.10139D	$3.04(15) \times 10^3$	M ³	1	
14	B3.10141X	$7.18(36) \times 10^3$	M ³	1	> 5 d of sampling
15	B3.10142Y	$5.80(29) \times 10^3$	M ³	1	
16	B3.10143Z	$4.27(21) \times 10^3$	M ³	1	
17	B3.10144A	$5.56(28) \times 10^3$	M ³	1	
18	B3.10145B	$5.74(29) \times 10^3$	M ³	1	
19	B3.10146C	$4.32(22) \times 10^3$	M ³	1	
20	B3.10147D	$6.16(31) \times 10^3$	M ³	1	
21	B3.10148E	$4.31(22) \times 10^3$	M ³	1	
22	B3.10149F	$4.31(22) \times 10^3$	M ³	1	
23	B3.10150Y	$2.81(14) \times 10^3$	M ³	1	
24	B3.10151Z	$2.96(15) \times 10^3$	M ³	1	
25	B3.10152A	$4.31(22) \times 10^3$	M ³	1	
26	B3.10153B	$4.31(22) \times 10^3$	M ³	1	
27	B3.10154C	$4.24(21) \times 10^3$	M ³	1	
28	B3.10155D	$4.16(21) \times 10^3$	M ³	1	
29	B3.10156E	$3.19(16) \times 10^3$	M ³	1	
30	B3.10157F	$5.67(28) \times 10^3$	M ³	1	
31	B3.10158G	$4.28(21) \times 10^3$	M ³	1	
32	B3.10159H	$4.32(22) \times 10^3$	M ³	1	
33	B3.10160A	$4.18(21) \times 10^3$	M ³	1	
34	B3.10161B	$5.70(28) \times 10^3$	M ³	1	
35	B3.10165F	$7.17(36) \times 10^3$	M ³	1	
36	B3.10166G	$4.66(23) \times 10^3$	M ³	1	
37	B3.10167H	$4.18(21) \times 10^3$	M ³	1	
38	B3.10168J	$7.43(37) \times 10^3$	M ³	1	> 5 d of sampling
39	B3.10169K	$8.60(43) \times 10^3$	M ³	1	> 5 d of sampling
40	B3.10170C	$5.68(28) \times 10^3$	M ³	1	
41	RBK	1	SAMP	1	
42	RBK	1	SAMP	1	

Counted	min	Pos	Analysis	Sample ID	QC	α/β	Count	Net cpm	Result	Unit	Q	Warn
2013-10-22 14:25	20.0	9	00675418Y	B3.10135Z		α	39	1.62	$2.35(49) \times 10^{-4}$	PCI/M ³	D	
						β	2155	102.58	$1.015(64) \times 10^{-2}$	PCI/M ³		
2013-10-22 14:46	20.0	23	00675446C	B3.10150Y		α	16	0.47	$2.4(11) \times 10^{-4}$	PCI/M ³	D	
						β	244	7.03	$2.49(33) \times 10^{-3}$	PCI/M ³		
2013-10-22 15:06	20.0	1	00675403Q	B3.10127Z		α	7	0.02	$7(56) \times 10^{-6}$	PCI/M ³	D	
						β	323	10.98	$2.74(29) \times 10^{-3}$	PCI/M ³		
2013-10-22 15:27	20.0	2	00675405T	B3.10128A		α	12	0.27	$9.2(65) \times 10^{-5}$	PCI/M ³	D	
						β	314	10.53	$2.46(26) \times 10^{-3}$	PCI/M ³		
2013-10-22 15:47	20.0	3	00675407V	B3.10129B		α	11	0.22	$7.5(62) \times 10^{-5}$	PCI/M ³	D	
						β	262	7.93	$1.84(23) \times 10^{-3}$	PCI/M ³		
2013-10-22 16:08	20.0	4	00675409X	B3.10130U		α	12	0.27	$9.3(65) \times 10^{-5}$	PCI/M ³	D	
						β	553	22.48	$5.27(42) \times 10^{-3}$	PCI/M ³		
2013-10-22 16:29	20.0	5	00675411Q	B3.10131V		α	19	0.62	$9.0(34) \times 10^{-5}$	PCI/M ³	D	
						β	911	40.38	$4.01(28) \times 10^{-3}$	PCI/M ³		
2013-10-22 16:49	20.0	6	00675412R	B3.10132W		α	15	0.42	$1.43(71) \times 10^{-4}$	PCI/M ³	D	
						β	441	16.88	$3.91(34) \times 10^{-3}$	PCI/M ³		
2013-10-22 17:10	20.0	7	00675414U	B3.10133X		α	23	0.82	$2.78(87) \times 10^{-4}$	PCI/M ³	D	
						β	1311	60.38	$1.398(92) \times 10^{-2}$	PCI/M ³		
2013-10-22 17:30	20.0	8	00675416W	B3.10134Y		α	16	0.47	$1.84(85) \times 10^{-4}$	PCI/M ³	D	
						β	1058	47.73	$1.275(87) \times 10^{-2}$	PCI/M ³		
2013-10-22 17:51	20.0	9	00676642J	B3.10135Z	DUP	α	57	2.52	$3.66(60) \times 10^{-4}$	PCI/M ³	D	
						β	2184	104.03	$1.030(64) \times 10^{-2}$	PCI/M ³		
2013-10-22 18:12	20.0	10	00675420R	B3.10136A		α	24	0.87	$1.32(40) \times 10^{-4}$	PCI/M ³	D	
						β	1154	52.53	$5.45(36) \times 10^{-3}$	PCI/M ³		
2013-10-22 18:32	20.0	11	00675422U	B3.10137B		α	22	0.77	$2.74(89) \times 10^{-4}$	PCI/M ³	D	
						β	903	39.98	$9.70(68) \times 10^{-3}$	PCI/M ³		
2013-10-22 18:53	20.0	12	00675424W	B3.10138C		α	28	1.07	$4.0(11) \times 10^{-4}$	PCI/M ³	D	
						β	1023	45.98	$1.188(81) \times 10^{-2}$	PCI/M ³		
2013-10-22 19:14	20.0	13	00675426Y	B3.10139D		α	23	0.82	$3.9(12) \times 10^{-4}$	PCI/M ³	D	
						β	849	37.28	$1.219(86) \times 10^{-2}$	PCI/M ³		
2013-10-22 19:34	20.0	14	00675428A	B3.10141X		α	17	0.52	$1.06(45) \times 10^{-4}$	PCI/M ³	D	
						β	626	26.13	$3.62(28) \times 10^{-3}$	PCI/M ³		
2013-10-22 19:55	20.0	15	00675430U	B3.10142Y		α	20	0.67	$1.69(60) \times 10^{-4}$	PCI/M ³	D	
						β	897	39.68	$6.81(48) \times 10^{-3}$	PCI/M ³		
2013-10-22 20:15	20.0	16	00675432W	B3.10143Z		α	12	0.27	$9.2(65) \times 10^{-5}$	PCI/M ³	D	
						β	375	13.58	$3.17(30) \times 10^{-3}$	PCI/M ³		
2013-10-22 20:36	20.0	17	00675434Y	B3.10144A		α	7	0.02	$5(40) \times 10^{-6}$	PCI/M ³	D	
						β	594	24.53	$4.39(34) \times 10^{-3}$	PCI/M ³		
2013-10-22 20:57	20.0	18	00675436A	B3.10145B		α	15	0.42	$1.07(53) \times 10^{-4}$	PCI/M ³	D	
						β	819	35.78	$6.20(44) \times 10^{-3}$	PCI/M ³		
2013-10-22 21:17	20.0	19	00675438C	B3.10146C		α	15	0.42	$1.42(71) \times 10^{-4}$	PCI/M ³	D	
						β	855	37.58	$8.66(61) \times 10^{-3}$	PCI/M ³		
2013-10-22 21:38	20.0	20	00675440W	B3.10147D		α	13	0.32	$7.6(47) \times 10^{-5}$	PCI/M ³	D	
						β	217	5.68	$9.2(14) \times 10^{-4}$	PCI/M ³		
2013-10-22 21:58	20.0	41	00676643K		RBK	α	5	-0.08	$-1.2(20) \times 10^{-1}$	PCI/SAMID		
						β	124	1.03	$1.03(64)$	PCI/SAMP		
2013-10-22 22:19	20.0	21	00675442Y	B3.10148E		α	22	0.77	$2.60(85) \times 10^{-4}$	PCI/M ³	D	
						β	1244	57.03	$1.316(87) \times 10^{-2}$	PCI/M ³		
2013-10-22 22:40	20.0	22	00675444A	B3.10149F		α	19	0.62	$2.10(79) \times 10^{-4}$	PCI/M ³	D	
						β	1177	53.68	$1.240(83) \times 10^{-2}$	PCI/M ³		
2013-10-22 23:00	20.0	23	00676644L	B3.10150Y	DUP	α	13	0.32	$1.7(10) \times 10^{-4}$	PCI/M ³	D	
						β	246	7.13	$2.53(33) \times 10^{-3}$	PCI/M ³		
2013-10-22 23:21	20.0	24	00675448E	B3.10151Z		α	16	0.47	$2.3(11) \times 10^{-4}$	PCI/M ³	D	
						β	840	36.83	$1.237(88) \times 10^{-2}$	PCI/M ³		

2013-10-22 23:41	20.0	25	00675450Y	B3.10152A		α	25	0.92	$3.11(90) \times 10^{-4}$	PCI/M ³	D
2013-10-23 00:02	20.0	26	00675452A	B3.10153B		β	1364	63.03	$1.455(95) \times 10^{-2}$	PCI/M ³	
						α	20	0.67	$2.27(81) \times 10^{-4}$	PCI/M ³	D
						β	1260	57.83	$1.335(88) \times 10^{-2}$	PCI/M ³	
2013-10-23 00:22	20.0	27	00675454C	B3.10154C		α	15	0.42	$1.45(72) \times 10^{-4}$	PCI/M ³	D
						β	646	27.13	$6.37(48) \times 10^{-3}$	PCI/M ³	
2013-10-23 00:43	20.0	28	00675480E	B3.10155D		α	41	1.72	$6.0(12) \times 10^{-4}$	PCI/M ³	D
						β	1378	63.73	$1.53(10) \times 10^{-2}$	PCI/M ³	
2013-10-23 01:04	20.0	29	00675482G	B3.10156E		α	12	0.27	$1.23(87) \times 10^{-4}$	PCI/M ³	D
						β	615	25.58	$7.98(61) \times 10^{-3}$	PCI/M ³	
2013-10-23 01:24	20.0	30	00675484J	B3.10157F		α	24	0.87	$2.24(67) \times 10^{-4}$	PCI/M ³	D
						β	1088	49.23	$8.65(58) \times 10^{-3}$	PCI/M ³	
2013-10-23 01:45	20.0	31	00675486L	B3.10158G		α	31	1.22	$4.2(10) \times 10^{-4}$	PCI/M ³	D
						β	1025	46.08	$1.071(73) \times 10^{-2}$	PCI/M ³	
2013-10-23 02:05	20.0	42	00676645M		RBK	α	7	0.02	$3(22) \times 10^{-2}$	PCI/SAMID	
						β	103	-0.02	$-2(60) \times 10^{-2}$	PCI/SAMP	
2013-10-23 02:26	20.0	32	00675488N	B3.10159H		α	13	0.32	$1.08(66) \times 10^{-4}$	PCI/M ³	D
						β	840	36.83	$8.48(60) \times 10^{-3}$	PCI/M ³	
2013-10-23 02:47	20.0	33	00675490G	B3.10160A		α	17	0.52	$1.81(77) \times 10^{-4}$	PCI/M ³	D
						β	388	14.23	$3.39(32) \times 10^{-3}$	PCI/M ³	
2013-10-23 03:07	20.0	34	00675492J	B3.10161B		α	17	0.52	$1.33(57) \times 10^{-4}$	PCI/M ³	D
						β	770	33.33	$5.83(42) \times 10^{-3}$	PCI/M ³	
2013-10-23 03:28	20.0	35	00675496N	B3.10165F		α	23	0.82	$1.67(52) \times 10^{-4}$	PCI/M ³	D
						β	2324	111.03	$1.542(96) \times 10^{-2}$	PCI/M ³	
2013-10-23 03:48	20.0	36	00675498Q	B3.10166G		α	25	0.92	$2.88(83) \times 10^{-4}$	PCI/M ³	D
						β	535	21.58	$4.61(37) \times 10^{-3}$	PCI/M ³	
2013-10-23 04:09	20.0	37	00675500Q	B3.10167H		α	10	0.17	$5.9(61) \times 10^{-5}$	PCI/M ³	D
						β	466	18.13	$4.31(37) \times 10^{-3}$	PCI/M ³	
2013-10-23 04:30	20.0	38	00675502T	B3.10168J		α	42	1.77	$3.47(68) \times 10^{-4}$	PCI/M ³	D
						β	1568	73.23	$9.81(63) \times 10^{-3}$	PCI/M ³	
2013-10-23 04:50	20.0	39	00675504V	B3.10169K		α	103	4.82	$8.17(99) \times 10^{-4}$	PCI/M ³	D
						β	3855	187.58	$2.17(13) \times 10^{-2}$	PCI/M ³	
2013-10-23 05:11	20.0	40	00675506X	B3.10170C		α	25	0.92	$2.36(69) \times 10^{-4}$	PCI/M ³	D
						β	1408	65.23	$1.144(75) \times 10^{-2}$	PCI/M ³	

Reviewed by: _____

Date: 10 / 23 / 2013

**National Air and Radiation Environmental Laboratory
QC Batch Report**

QC Batch #: 0010403M

Analytical Method: AIRBETA

METHOD BLANKS (PCI)

Sample ID	Nuclide	Activity $\pm 2\sigma$	Prep Date	Flags
00676643K	BETA	1.03e+00 \pm 1.3e+00	2013-10-22	OK

LABORATORY DUPLICATES (PCI/M3)

Sample ID	Nuclide	Original $\pm 2\sigma$	Duplicate $\pm 2\sigma$	RPD	Z
B3.10135Z	BETA	1.02e-02 \pm 1.3e-03	1.03e-02 \pm 1.3e-03	1.40	0.16 OK

Analyst:

N. Qin

10/23/13

QA Officer:

Kimberly M. Fox

10/23/13

National Air and Radiation Environmental Laboratory
QC Batch Report

QC Batch #: 0010404N

Analytical Method: AIRBETA

METHOD BLANKS (PCI)

Sample ID	Nuclide	Activity $\pm 2\sigma$	Prep Date	Flags
00676645M	BETA	-1.99e-02 \pm 1.2e+00	2013-10-22	OK

LABORATORY DUPLICATES (PCI/M3)

Sample ID	Nuclide	Original $\pm 2\sigma$	Duplicate $\pm 2\sigma$	RPD	Z
B3.10150Y	BETA	2.49e-03 \pm 6.7e-04	2.53e-03 \pm 6.7e-04	1.41	0.08 OK

Analyst: N. Owi

10/23/13

QA Officer: Kurt J. McLean

10/23/13

Method Blanks**Analyte: BETA****Method: AIRBETA****Analyst: Siddiqui, Nina S.**